(c) whether it is also a fact that all the five schemes of the State are pending with Central Government for clearance; and

(d) if so, the steps taken or being taken by Government to expedite clearance of all the five schemes of the State?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI KAPIL SIBAL): (a) Yes, Sir. Council of Science and Technology, UP, Department of Science and Technology, Uttar Pradesh had submitted five schemes/projects of science & technology sector for approval of Central Government in the Department of Bio-Technology.

(b) These five proposals relate to (i) Demonstration & transfer of technology for bio-pesticides; (ii) Display, demonstration & training on BGA Bio-fertilizer technology; (iii) Establishment of Center for Bio-fertilisers, (iv) Establishment of Center of plant tissue culture and (v) demonstration and training on cultivation and processing of medicinal and aromatic plants.

(c) No, Sir.

(d) Does not arise.

Promoting of scientific research

1987. SHRI C. PERUMAL: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether it is proposed to bring framework legislation to promote scientific research;

(b) if so, the details thereof; and

(c) by when the legislation would be brought forward?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI KAPIL SIBAL): (a) to (c) Discussions are taking place whether or not there is a need to have legislation to promote scientific research in the country.

Research in Biotechnology

1988. SHRIMATI N.P. DURGA: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether it is a fact that Department of Biotechnology has selected new areas for research in the field of Biotechnology;

(b) what exactly is bio-separation;

(c) whether any research is going on in the country on bio-separation; and

(d) if so, in what way it helps the common man?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI KAPIL SIBAL): (a) Yes, Sir.

(b) Bio-separation is the process for purification of targeted bio-molecule by applying various techniques. Bio-molecules are usually present in very low concentrations. Further, the impurities could have physicochemical properties similar to those of the target compound of interest. Several separation steps are needed to obtain the target molecule sufficiently pure to make it suitable for a specific use. The primary downstream operation is the removal of insolubles (e.g. by sedimentation, filtration, centrifugation, permeation by membranes), followed by isolation of the compound (e.g. by precipitation, extraction, adsorption, separation by membranes) and final purification (e.g. by crystallization, chromatography).

(c) Yes, Sir.

(d) Bio-separation is useful for various biotechnological applications involving large scale purification and protein separation. It is one of the steps involved in the process for preparation of therapeutically important compounds, antibiotics, food supplements and enzymatic preparations. It also has application in water and air purification systems leading to reduction in environmental pollution.

Gene Silencing

1989. SHRI NANDI YELLAIAH: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether Hyderabad based Centre for Cellular and Molecular Biology (CO M.B.) led by Manika Pal Bhadra and Utpal Bhadra under C.C.M.B., Director Shri Lalji Singh has unraveled the Mystery behind Gene Silencing paving the way for detecting the mechanisms that prevents cancer in human beings;

(b) if so, the details thereof;